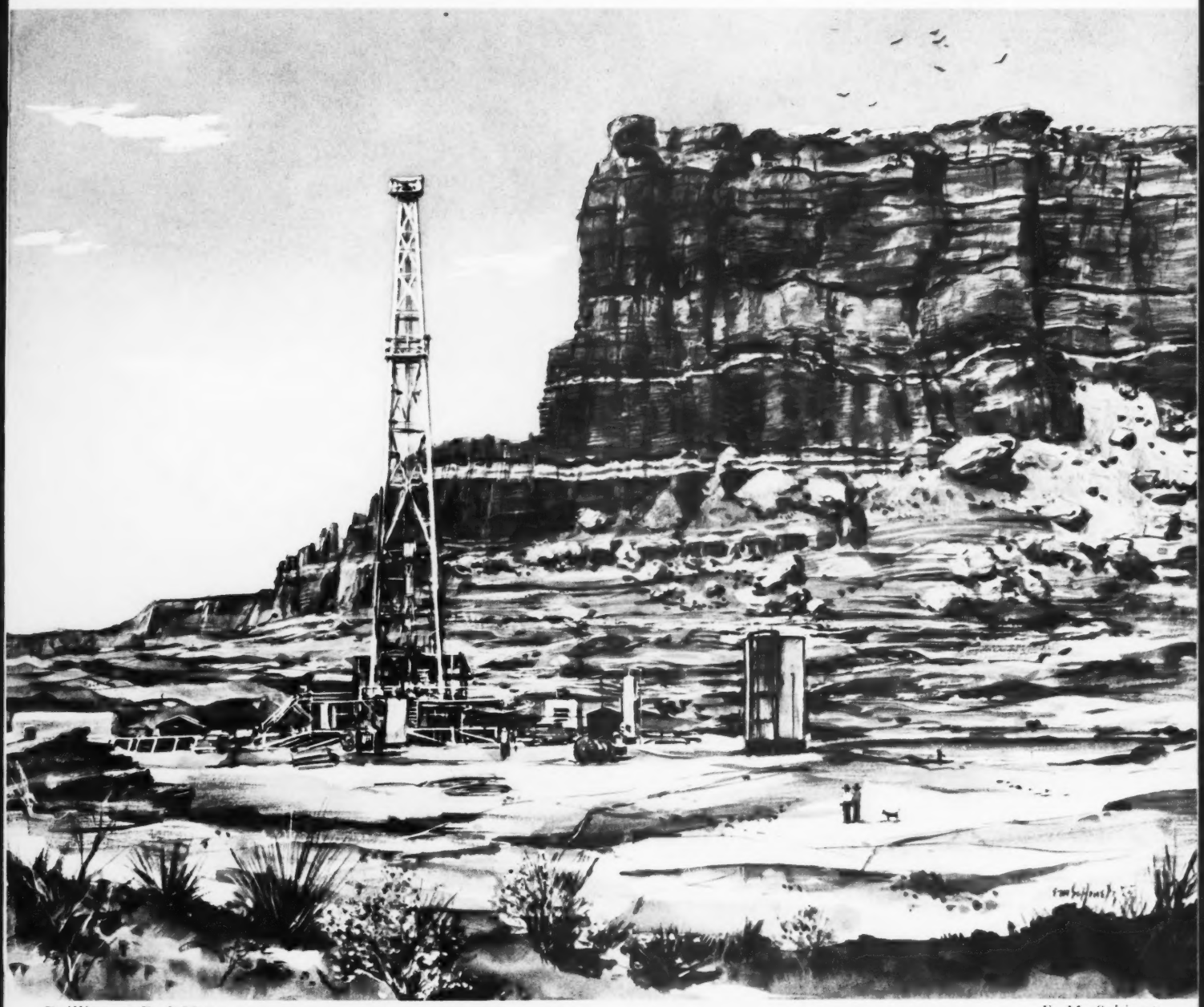
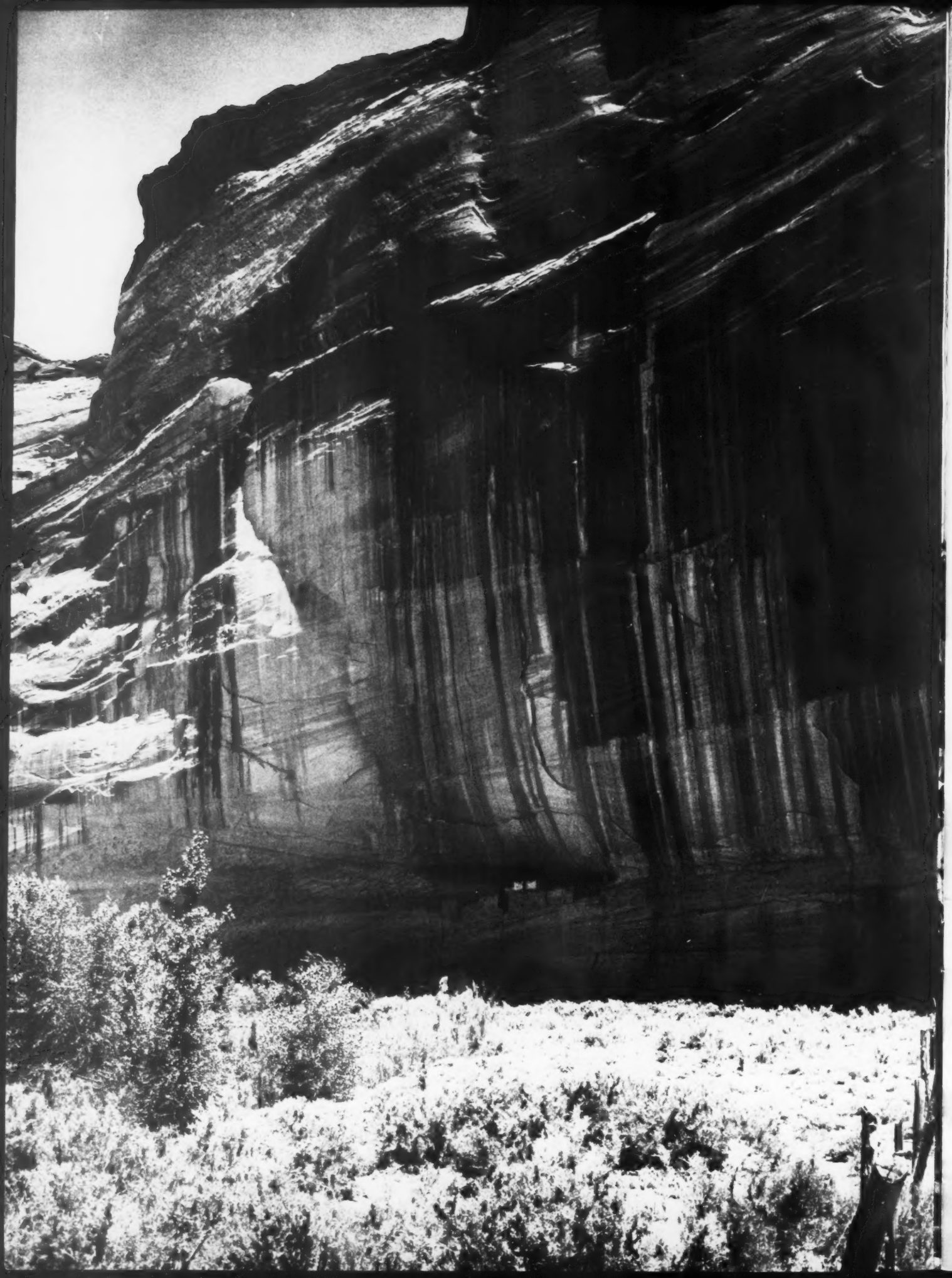


Drilling at Red Mesa — *E. M. Schiwetz*

The Humble Way

NOVEMBER-DECEMBER, 1955



The Humble Way
November-December, 1955
Vol. XI No. 4

Land Of The Big Risk

BY RICHARD J. GONZALEZ*

IN THIS AGE when security is so much the keyword, it is well to remember that risk-taking has played a very important part in the progress of the world. If it had not been for explorers and pioneers who were willing to take a chance, it would have taken much longer to discover, settle, and develop the American continent. And unless the spirit of those explorers and pioneers still prevailed, we would not have the United States of America as it is today.

The progress of the world depends on people being willing to risk their energies, their talents, and their capital in trying something new. If it were not for that sort of enterprise on the part of a great many people, we would still be living in more or less the same fashion that people lived two thousand years ago. We would still be using wooden plows and hand scythes, and living in rude huts with little clothing and food. Many peoples of the world still live that way today, but fortunately not in America! Due to enterprise and risk-taking, the people of this nation have invented and de-

* Director and Treasurer of Humble Oil & Refining Company.

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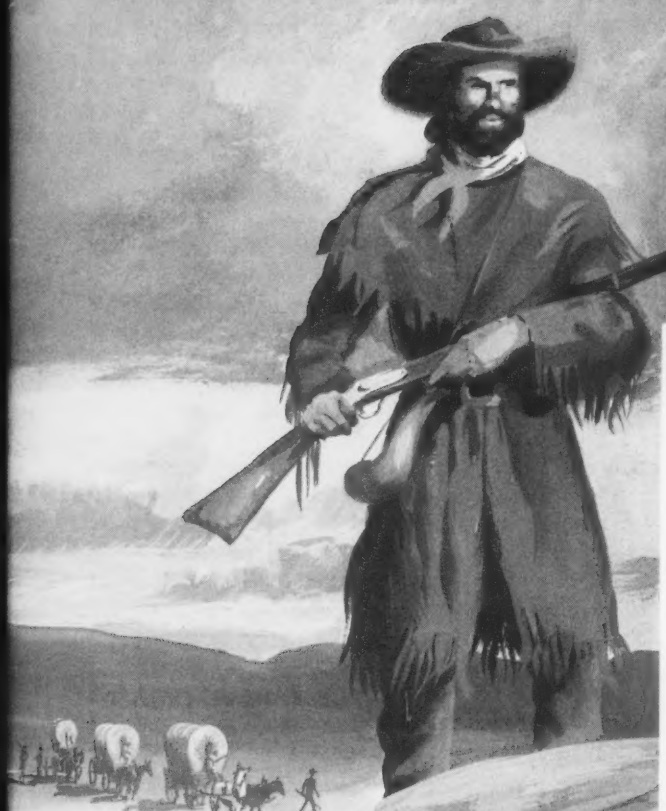

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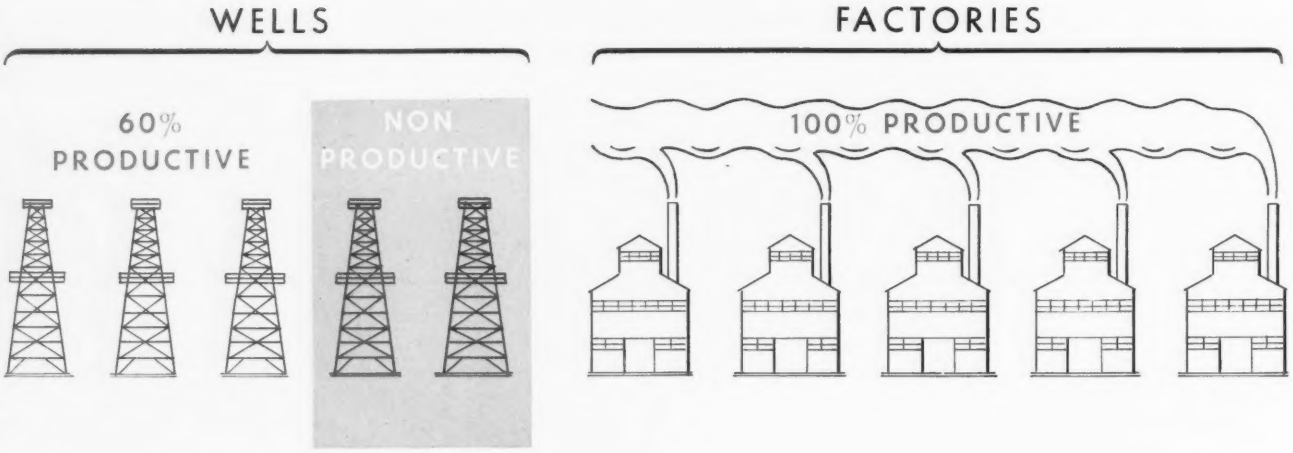
Few of us would want to invest our money in a business if we knew that we had to build two-thirds of a useless factory for every productive factory . . . yet the search for oil requires just such a risk



veloped the tools and mineral power which make possible our high standard of living.

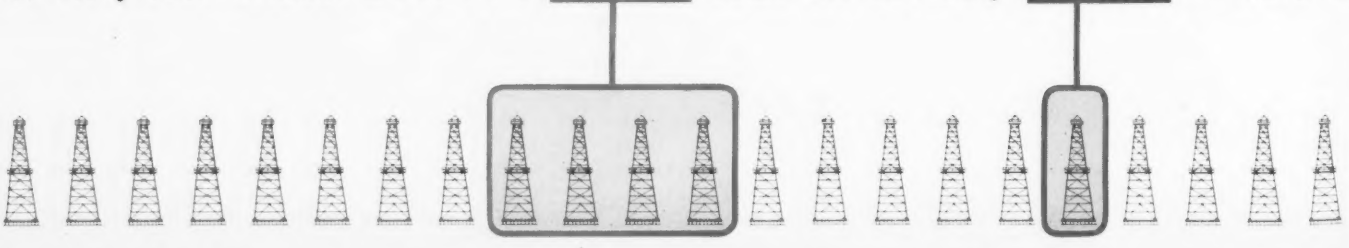
Of the many forms of risk-taking, let us consider particularly that involved in petroleum production. Petroleum production depends upon taking extraordinary risks and venturing large sums of money against great odds. Unfortunately, that is not generally appreciated. On the contrary, the widespread impression that has been created in the minds of the public is that every man who drills an oil well hits a gusher, that every man in the oil business is automatically a millionaire, and that one can do nothing in this industry but make fabulous amounts of money.

This popular impression is created by movies, magazines, and newspapers which concentrate on the success stories. Frequently, only the first part of the success story is told—the success which leads to the initial fortune. The end of the story, which deals with the loss of that fortune because the man continued to take risks, is too often omitted. The more common story of the great majority of producers who realize only average success or of the many who lose money is seldom considered news, because it is typical rather than spectacular.

Unfortunately, these stories have led to Texas being labeled the "land of the big rich." Misunderstanding of that sort finds its expression in many ways. For instance, it has brought on a clamor that the natural gas industry should be regulated. Some people seem to think that because a large part of the gas in the country is produced in Texas, federal regulation of the price received by gas producers is necessary in order to protect consumers, even though the field price of gas is so low that the industry is hard pressed to meet increasing demands. Some of the attacks upon the tax provisions that apply to petroleum production also illustrate the sentiment that has developed against Texas and other producing states because of a lack of understanding of the oil industry.

The true story, of course, is quite different. Texas is not the "land of the big rich" any more than any other area with a similar concentration of population and resources, whether it be Westchester County in New York, or the Los

Of forty-four wildcat wells . . . four find some oil but only one finds a field of a



Angeles area, or the Chicago area. If Texas must bear a special title, it is the "land of the big risk"—the land where people are taking some of the greatest risks that one can imagine.

Let us consider this business of hunting for oil and the risks involved in it. First of all, in most business investments, when you put up your money, you have a pretty clear idea of what kind of a factory, office building, or store your money will buy. In the oil producing business, you must first risk large amounts of money without knowing what results to expect. The only thing you can be sure about in the search for oil is that the process will inevitably involve a good many losses.

The magnitude of these risks in the search for oil staggers the imagination. First of all, oil and gas cannot be located directly, because they usually exist thousands of feet beneath the surface of the earth—3,000 to 15,000 feet, or even deeper. The only thing that geologists can tell us is that far beneath the surface of the earth, oil and gas may have accumulated in certain formations they call geologic traps. But even if the traps exist and contain oil or gas, we have no assurance of a profit when we drill into them. Only if enough oil and gas can be recovered per well can a producer make a profit on his operations.

After spending a tremendous amount of money for leasing acreage and conducting geophysical operations and geologic search in the hopes of finding traps that might hold oil or gas, we finally have to drill some exploratory wells in order to find out what Nature has buried underground. In that process we find that only one out of nine wells drilled in the search for new fields finds any production whatever. Only one in 44 of these exploratory wildcat wells finds a field with more than a million barrels; and that means enough oil to last the nation for roughly four hours.

THESE are long odds, and billions of dollars have to be risked against these odds. The industry spends about 2 billion dollars a year on exploration and the drilling of dry holes. Probably not over 10 per cent of that expenditure really finds anything. Then, after the industry has found something, it must still drill the development wells that are necessary to produce this oil. Thousands of development wells are drilled every year, and one-fourth of them are dry holes.

Considering all wells drilled—exploratory and development—we find that nearly 40 per cent of all of the wells drilled are dry. Out of some 50,000 wells drilled annually, the industry can expect nearly 20,000 dry holes. In other words, for every producing well the industry also drills two-thirds of a dry hole. Few of us would want to invest our money in a business if we knew that we would have to build two-thirds of a useless factory for every productive factory, yet the search for oil requires that a great deal of money be risked against such odds in order to supply us with the oil and gas we need.

WHEN oil and gas are found, what is the typical well like? Do we have the Hollywood version of a tremendous "gusher," or do we have something quite different?

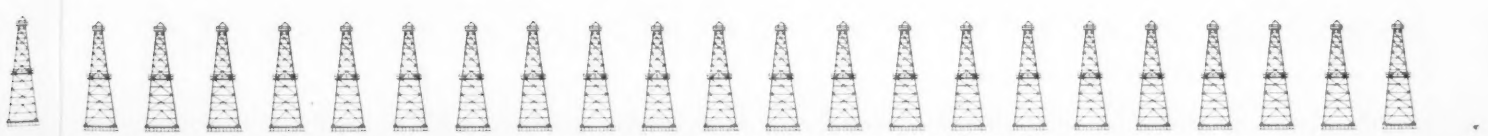
On the average, the typical well that the industry is developing nowadays will probably produce something between 100,000 and 120,000 barrels of oil over a life of possibly 20 years. That is not such a fantastic gusher after all, is it? Because this turns out to be a well that may produce 20 barrels a day on the average for 15 to 20 years. This is a far cry from the well described in the criticism of the oil industry by a Senator who assumed that a well would produce $5,000,000 worth of oil a year for 10 years. The truth is that the typical well will probably gross only about $350,000 over 20 years, that most of this gross will be absorbed by royalties and expenses, and that profits will probably be not much above the average in industries with much less risk.

On the average, operations in the petroleum industry are just about as profitable as manufacturing or trade. Considering all the risks of the oil producing business, one would expect a much higher rate of profit on production. Profits of successful producers are a little higher than the average of manufacturing businesses, but hardly as much higher as one would think it must be. Fortunately, people hunting for oil generally think they will beat the average, and therefore risk their money in the hope that their rate of return will be better than average.

When it comes to investing our money most of us are conservative. We would hate to face the possibility of losing our hard-earned savings. We are willing to take a risk on what *rate of return* we might get on our capital, but we are not very eager to risk the loss of that capital itself. In the search for oil it is necessary to risk capital against the likelihood of losing a substantial part of it, with the hope of enough success on the discoveries to result in profits higher than could be realized on much less hazardous investments.

In this age when people are so much interested in security, what is it that attracts people to take this kind of risk? Of course, it is the hope of making a profit. It is the belief that springs eternally—the belief that we can beat the odds, that

l of a million barrels or more—enough to last the nation for roughly four hours



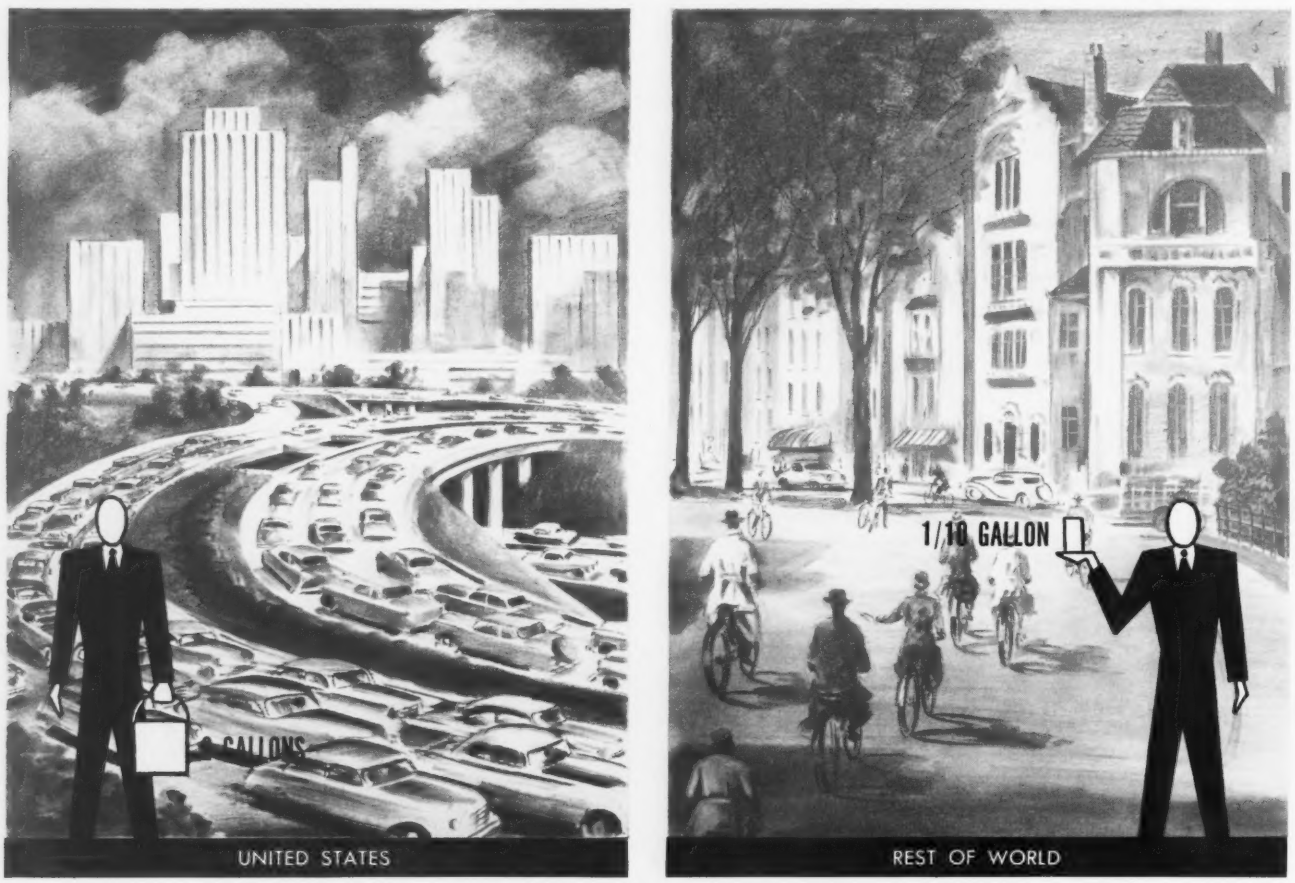
we know better than the others who have failed how to find oil and make a fortune. And it is very fortunate that we have such optimists who think they can beat the odds, because in the process of seeking a fortune they do find some oil. But when they do, they face one more difficult problem that all of us face. How much of this money will Uncle Sam take through the process of tax collection?

Here we run into one of the greatly misunderstood areas about the oil industry. Tax laws, as we all know, are rather complicated. They provide one thing for ordinary income, another for capital gains; special provisions for life insurance companies and investment trusts, and so on. One of the most complex provisions of the law deals with the deductions that an oil producer is allowed in case he is successful in establishing production.

This is the section of the law that deals with depletion; more specifically with what is called *percentage depletion*. This provision of the tax laws states that a producer can deduct for tax purposes as depletion on his production up to 27½ per cent of his gross income but not more than 50 per cent of his net income before depletion. This is different from the ordinary tax provision with respect to depreciation. And it is different because there is a vast difference between depletion and depreciation.

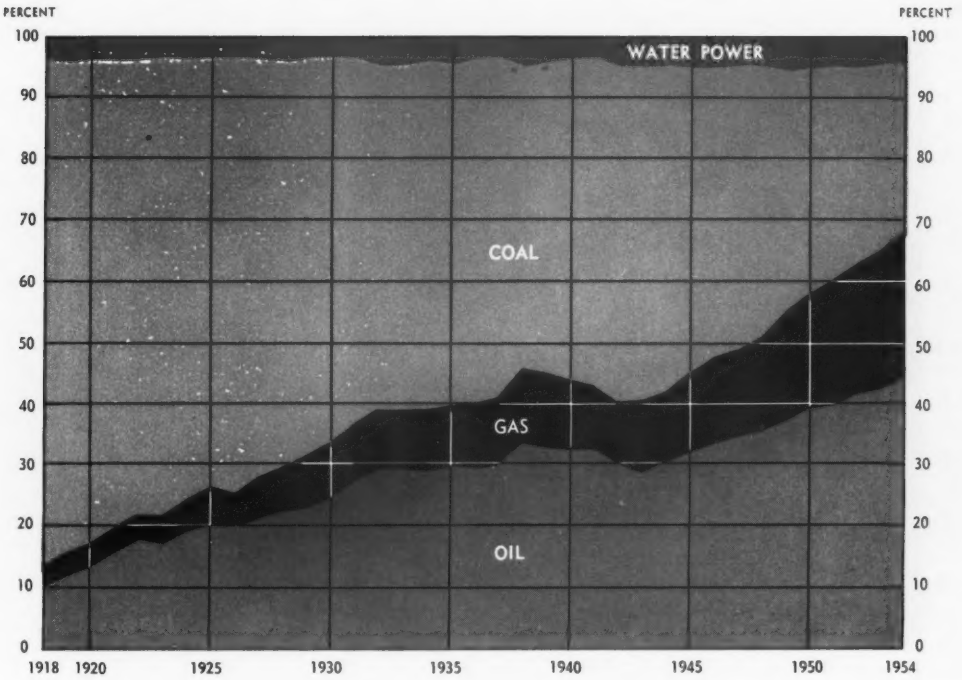
Depreciation applies to investments in plants, buildings, and equipment. In these cases, the investor knows what results he can expect from his money before spending it. Depletion relates to the exhaustion of irreplaceable resources such as oil, gas, coal and metals. For these resources, particularly oil and gas, one cannot be sure what to expect from money spent in trying to find and develop them. There are always the losses as well as the successful investments. There is more money back of oil and gas, therefore, than just the dollars spent on the successful producing lease. For this reason, Congress a long time ago recognized that it had to have a special type of provision to take care of petroleum depletion. It first adopted what was called "discovery value" depletion. The essence of this provision was simply that at the time oil was discovered the operator and the tax man determined what the value of that oil was in the ground. Thereafter, as the operator produced a barrel, depletion was allowed in relation to discovery value. This proved extremely difficult to administer because it had to be applied to each of thousands of producing leases and there were constant disagreements about the determination of discovery value.

In 1926, Congress tried to find a simple substitute for this formula. After study, it found that the discovery value represented something like 30 per cent of the price of oil. Congress settled on a maximum depletion rate of 27½ per cent, designed to give the government the benefit of any doubt. As it has worked out, the maximum depletion allowed comes close to representing the price people are willing to pay for discovered oil in the ground—apart from the cost of development—and therefore it is a good measure of the depletion that actually takes place.



We use twenty times as much oil per capita as the people in the rest of the world. There is a close relation between the use of oil and the standard of living.

DISTRIBUTION OF ENERGY CONSUMPTION



This tax provision has been under attack, particularly by people in the Middlewest and the East who do not understand it and who have the erroneous concept that the oil industry is a fabulously profitable business. Unfortunately, the subject is so complicated that not many people can be expected to study or understand it thoroughly. Nevertheless, it is important that we have the right attitude and a broad understanding of petroleum depletion, because oil is literally the foundation of our economic progress. Without oil and gas, our civilization would be entirely different. We could not have automobiles, airplanes, mobile transportation, and automatic furnaces. We would be bound by stationary energy in the form of coal. And that does not lend itself to the kind of society in which we live. We cannot continue to make rapid economic progress without abundant supplies of oil.

We in the United States are fortunate to have oil in abundance. We use an average of two gallons per person per day. Some of it is used directly in our automobiles or for heating, but a lot of it is used indirectly in industries; in transportation by trucks, railroads, and airplanes; in shipping; and in every form of industry. We use twenty times as much oil per capita as the people in the rest of the world. The significance of this becomes apparent when we realize that there is a close relation between the use of oil and the standard of living—the higher the use of oil per person, the higher the standard of living.

IN this country, oil and gas supply two-thirds of all the energy we use. Coal now supplies only one-third, completely reversing the situation that existed some thirty years ago. The energy that we get from oil and gas is the equivalent to roughly 33 servants for each one of us—man, woman, and child. That is roughly 132 servants for the average family of four, supplied by oil and gas, compared with the equivalent of 68 servants from coal and water power. These mechanical servants can do things that no human servant could do even if we could afford to hire and feed and keep that many human servants. They can freeze our food and keep it cold. They make automobile and air travel possible for all of us. They can light our homes and operate our television and radio sets because much of the electric power that we use is generated by oil and gas.

OUR progress depends on fluid energy. This form of energy, in turn, depends on people being willing to risk their money in the search for oil and gas in order that all of us may enjoy the comforts and conveniences to which we may have become accustomed. Capital risked in the oil business offers us the prospect of more machines, more comforts, more profits, so that tomorrow we may have a better standard of living than we had yesterday. There seems to be no limit to progress if we can continue to develop our essential natural resources. Just as we look back on the horse and buggy days, our children may look back and feel sorry for the hardships and lack of conveniences that we have to endure in 1955. But we cannot hope to continue to find and produce in this country the oil and gas needed to assure further progress, unless we continue to have tax provisions which encourage people to risk billions of dollars in the search for new supplies.

The message I would like to leave with you is this: Although few can hope to understand the intricacies and the ramifications of the petroleum industry, it is a terribly important industry to all of us. When people attack it because of a lack of understanding, we should defend it as something as important to the standard of living of those critics as it is to the standard of living of our family.

Few of us will ever master the intricacies of the tax laws or of the peculiar risks inherent in the search for oil. Fortunately, we do not have to master them. All we need to know is that tax provisions operating to encourage the search for oil mean more petroleum for all of us, and that *petroleum spells progress.*

Heavy salt water, used in keeping well pressures under control during workover, was mixed at dockside and put into compartments of the barge. Water for cement was also stored in barge.

OFFSHORE WORKOVER

Permanent-type well-completion techniques prove economical in re-completing Grand Isle well

AN AILING oil well can be a mighty expensive patient—especially when it is out on the Continental Shelf, surrounded by the restless waters of the Gulf of Mexico. In fact, the high cost of well workovers has long been one of the brow-wrinkling problems of the offshore oil operators.

But progress is now being made in reducing this formidable expense item. Humble recently worked over an offshore well at Grand Isle, Louisiana, at a saving of 85 per cent of the estimated normal cost.

The saving was accomplished by use of the same permanent-type well-completion techniques which have already proved highly successful on land locations. This type of workover requires no derrick, and the tubing is not pulled from the well. All operations are carried out with special tools lowered on a wire line through the tubing. If necessary—and it was on this job—the old perforations in the casing can be plugged with cement and new perforations made at a different level, all without removing the tubing or killing the well.

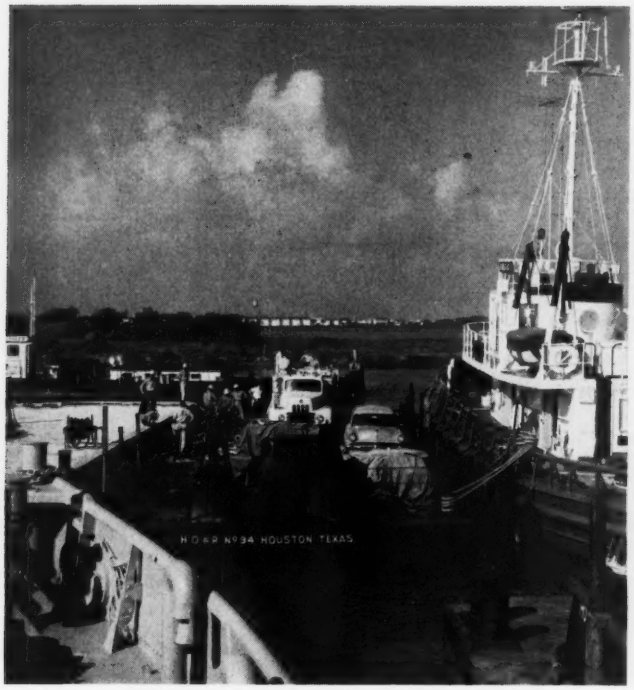
Although Humble has been completing virtually all its new offshore wells by the permanent-type completion method since 1953, this is the first of the type to require a workover. Located eight miles out from Grand Isle, it is a directionally-drilled well with liner set in the deviated hole. That made the job a little more tricky, but did not prevent the use of wire line tools.

To perform the workover, Humble used its specially-equipped well-completion truck* and accompanying station wagon, mounted on a barge.

The job required ten working days, with operations on a round-the-clock schedule. There were some delays, but the final result was a successful re-completion at a substantial saving. Even so, a workover offshore is still a lot more costly and troublesome than on land.

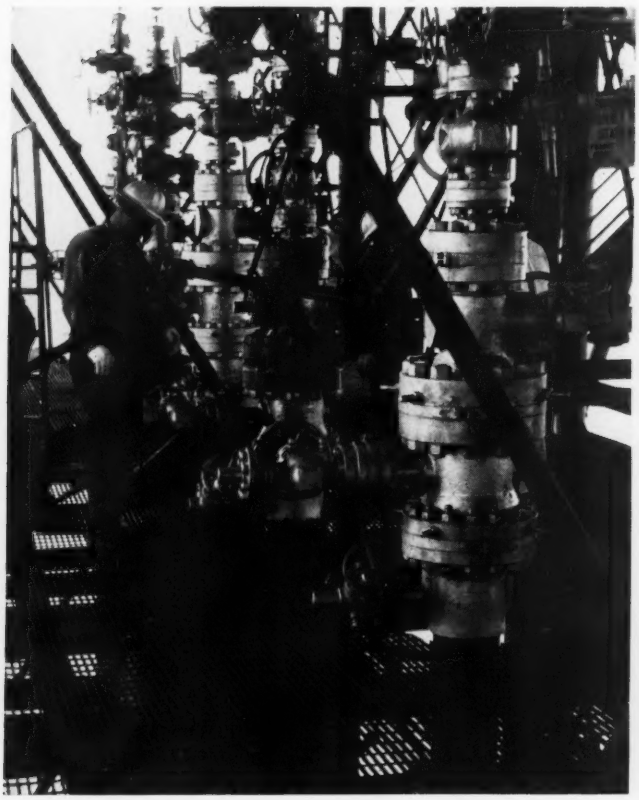
* See "Three-in-One Workover Truck," THE HUMBLE WAY, January-February, 1955.

Workover began as soon as the barge was secured beside the platform. All pumping operations were performed from the truck on the barge through flexible connections to the wellhead. A skid-mounted wire line unit was set up on platform deck, but did not give satisfactory service and the wire line work was completed by using the unit built into the workover truck. Since the well was not vertical but deviated, special centralizers were used to facilitate entrance of wire line tools into tubing liner.

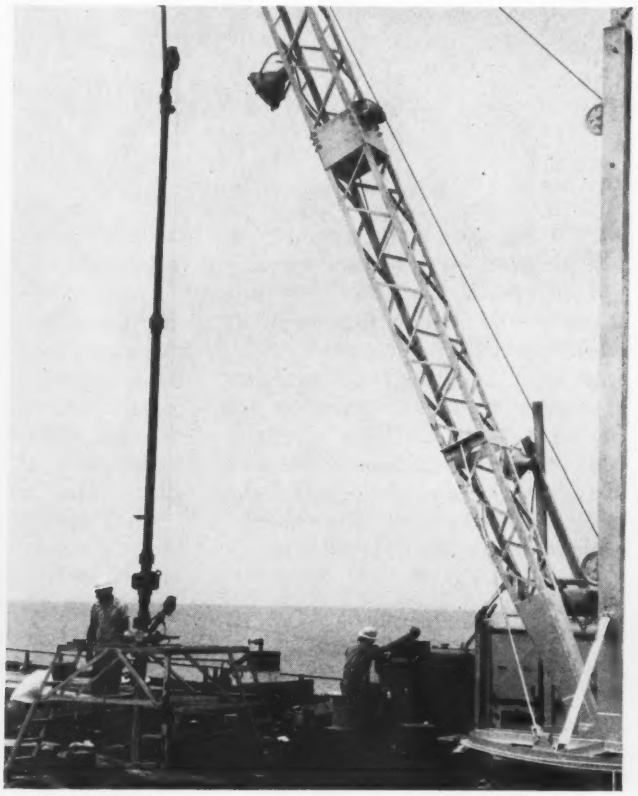


Truck unit and the station wagon containing perforating gun instruments were loaded on deck of barge, where they remained for the entire operation. The auxiliary vessel is a converted Coast Guard craft which provided transportation for the crew.

Enroute to the offshore well site, the heavily-laden barge was towed snugly alongside the auxiliary vessel. In this picture the sea appears calm, but a few days later the weather became rough and the workover had to be interrupted for three days.



Ailing well on which workover job was performed is one of six producing wells served by this stationary platform. Declining pressures gave the first indication of trouble, and the workover was prescribed for the purpose of re-completing the well.



Workover tools were lowered into well through lubricator joint atop the wellhead. Well was finally re-completed by cementing off the old perforations and re-perforating at a higher level. These operations were done from barge, using truck's facilities.

"O wad some Power the giftie gie us,
To see oursel's as ithers see us!"

Robert Burns

AS *Others*

"IN THIS part of the country," a citizen of West Texas recently told an opinion researcher, "we can always depend on the petroleum industry in any kind of emergency."

He went on to cite a case in point. Last spring, with time running out, his city faced the threat of an onrushing polio season. To help parents and doctors get the jump on the crippling disease, one of the local oil companies made a plane available to fly in a supply of Salk vaccine.

This was no isolated incident, the West Texan added. It was typical of the civic spirit which he and his neighbors have come to expect of the petroleum industry. This spirit shows up, he said, in everything from fat stock show awards to college scholarships.

Do most Texans share this favorable view of their state's oil and gas companies? If so, what are the reasons that explain this unusually close tie between the public at large and a sprawling, many-faceted industry?

To get at the answers to these and related questions, Humble took an offbeat survey route not long ago and arrived at some highly interesting and revealing answers.

About that first question, of course, there was really never much doubt. That Texas contains a reservoir of goodwill for the oil industry has long been known, if only from surface indications. Over the years, surveys based on questions with yes-no-or-maybe answers have turned up proof of this esteem. Much less has been known, however, about the underlying motives and inner feelings that form the bedrock for this favorable opinion.

It was to learn a little more about these basic sources of public goodwill that Humble undertook this most recent opinion survey.

Dr. Virginia Miles, a psychologist and opinion researcher, was placed in charge of the project. Assisting her was a team of 10 expert interviewers. Their job was to contact a representative cross section of Texans—drawn from various age, income, and occupation groups—and find out their attitudes toward the oil industry.

The research technique used by Dr. Miles was one that is relatively new: a motivation survey. This type of survey differs from the ordinary run of opinion sampling in that it avoids rigidly framed questions with sharply defined, black-and-white answers such as yes and no. Instead, it is primarily based on "depth interviews."

As explained by one of the pollsters:

"In a motivation survey, you hunt out a representative group of people and encourage them to talk at great length. You faithfully record what they have to say—verbatim as far as possible. The interviewer has a guide list of

SEE US

A new survey has plumbed the reservoir of goodwill enjoyed by the oil industry in Texas

the relevant areas to be investigated, but he himself says little. The respondent is given every opportunity to talk himself out. The interviewer injects only an occasional encouraging comment.

"The interviewer thus tries to get all of the respondent's ideas without leading or influencing his replies. Whenever spontaneous response ceases, the interviewer begins to dig. Through such probing, he gets the respondent to talk further, to explain, to look beneath the surface, to re-examine what he has said."

In other words, while new in a way, the motivation survey is actually based upon one of the very oldest methods of acquiring information and opinions —listening closely while people talk themselves out.

All told, Dr. Miles and her coworkers used this method to collect the opinions of 300 Texans, among them the man with kudos for the vaccine airlift. In interviews averaging an hour and a half each, these 300 Texans spelled out their varying views. They handed out numerous bouquets, but they also threw a few brickbats.

Dr. Miles found that an overwhelming majority of the respondents regard the petroleum industry with favor. To many of them, she learned, petroleum is synonomous with the prosperity of Texas. Their strong feelings of regional pride, therefore, are reflected in their attitudes toward the petroleum industry. Texans generally hold a favorable opinion of oil companies.

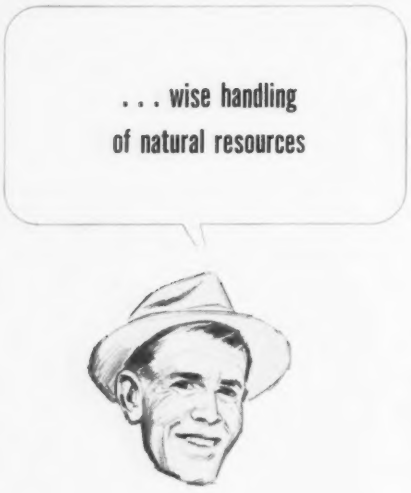
"Those attitudes are unusual," Dr. Miles commented. "One does not, for example, find comparable attitudes in Detroit toward the automobile industry. Residents of Detroit have a more favorable opinion of, and greater knowledge of, the automobile industry than do residents of other areas. But Detroiters are not as strong in their pride of Detroit or Michigan—they are just nice places to live.

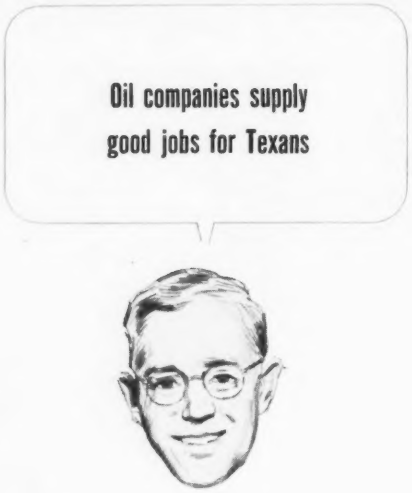
"Petroleum gains an added dimension from the regional feeling of Texans. Thus there is an added dimension in Texas attitudes that produces extra and unusual involvement with the petroleum industry."

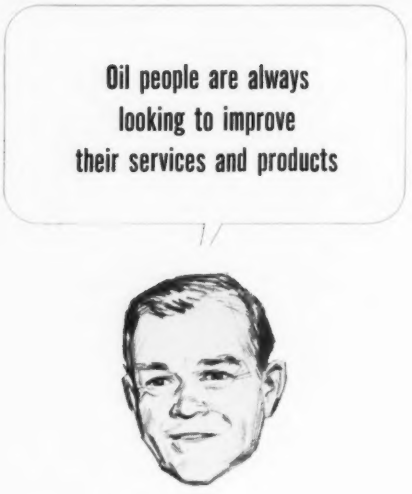
The spontaneous, top-of-mind associations which respondents attached to the petroleum industry bore out this observation. Among those that turned up most often were: Petroleum is an essential product. It is vital to national defense. The petroleum industry is big and important. It supplies good jobs for Texans. It is research-minded. It is a good citizen.

When asked to name specific benefits that Texas has derived from its oil companies, most respondents were able to name two or more.

• **Eighty-one per cent mentioned**







the heavy taxes paid by the industry—taxes that help pay for schools, build roads, and otherwise contribute to the public welfare.

- **The industry helps improve our standard of living, 65 per cent remarked.**
- **The industry's role in creating good jobs and paying good wages was cited by 51 per cent.**
- **Mentioned by 11 per cent was the industry's success in turning out new and better products.**

How would they compare the petroleum industry to other industries? To this question, 88 per cent replied that the petroleum industry is better. Ten per cent said it is about the same. Only two per cent thought it is not as good as others.

Among the reasons given by this whopping majority were that the petroleum industry is more important to national defense (mentioned by 95 per cent), its prices are more reasonable (88 per cent), its treatment of labor is better (82 per cent), it is more public-spirited (66 per cent), and there is more competition between companies (54 per cent).

The industry also got an excellent grade on its handling of natural resources. The petroleum companies are doing a good job, 78 per cent of the respondents told the interviewers. Eleven per cent disagreed, while another 11 per cent either didn't know or wasn't concerned.

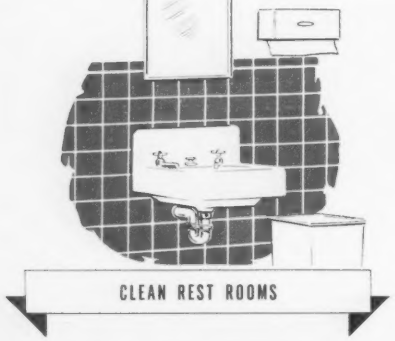
"Behind these statistics," Dr. Miles commented, "lies an important success story. The petroleum industry has overcome much resentment in creating a favorable feeling about the way petroleum resources are being managed. For attitudes toward natural resources are emotionally loaded. There is a predisposition on the part of most people to condemn 'big business' for the mishandling and exploitation of natural resources."

In their spontaneous comments, the 300 Texans showed that they put little credence in two other charges often hurled at "big business" by critics of the left: that it is inefficient and that it is monopolistic.

Their remarks on such things as fairness of prices and contributions to our standard of living indicated that they think the industry is not inefficient, but modern, dynamic, progressive, and growing. "One thing about the oil industry," said one respondent, "they're never satisfied to just stand still. They're always looking to improve their products."

As for monopoly, only six out of the 300 Texans made any spontaneous remarks on the subject that could be construed as negative. When ques-

HUMBLE'S OVERALL RATING IN SERVICE, PRODUCTS . A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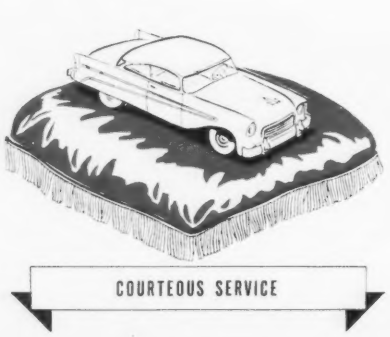
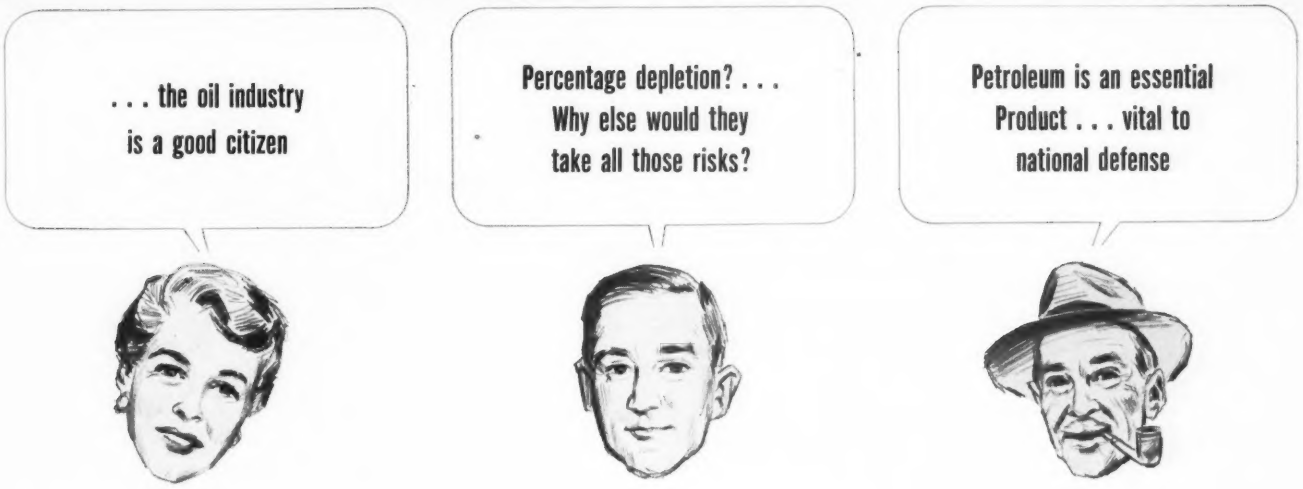

COURTEOUS SERVICE

HIGH QUALITY PRODUCTS


. . . the oil industry
is a good citizen
Percentage depletion? . . .
Why else would they
take all those risks?
Petroleum is an essential
Product . . . vital to
national defense

tioned specifically, two-thirds said they thought that other major industries were more of a "monopoly" than the petroleum industry. (Monopoly, said Dr. Miles, was "a confusing concept to most respondents.")

Although only 11 per cent said they disapproved of the way the oil companies were handling natural resources, there were 26 per cent who—when questioned directly, were able to cite some complaint. Among these were such things as: the companies overproduce; they waste water; they don't completely explore areas and are slow in opening fields; they ship gas and oil east and to foreign countries.

"A number of these comments," said Dr. Miles, "are unrelated to natural resources. Other comments were more or less stereotyped expressions of what respondents thought they ought to say. They were based on the memory of earlier conditions."

All in all, Dr. Miles said, Texans seem to be very well informed about the oil industry. Over half of the respondents (51 per cent), for example, said they knew what percentage depletion is, and of these 94 per cent approved of it as a fair and necessary incentive to invest in additional wells and to discover new fields. ("Otherwise," said one man, "who would take all the risks those guys have to take?")

These inquiries into the attitudes of Texans toward the petroleum industry as a whole were a necessary preliminary to carrying out another purpose of the survey—to find out their specific attitudes toward the Humble Company and its products, without tipping the respondent that this was a survey for Humble.

Humble's overall rating turned out to be high, outstandingly so among its customers. In fact, most spontaneous associations with the Company centered on its service stations. Its stations are clean, particularly its rest rooms, said a large percentage of the respondents. Its station driveway salesmen are efficient and courteous and give extra service.

Behind these associations with Humble stations followed product attributes ("its gasoline is of high quality"), and company attributes (good employee relations, good community spirit, and good advertising). Only a small percentage had unfavorable comments.

With this valuable information at hand, Humble will be able to take better aim at the building of even more favorable public opinion. For today, more than ever before, such favorable opinion is a prime ingredient of business success.

As Abraham Lincoln once put it: "Public sentiment is everything. With public sentiment nothing can fail. Without it, nothing can succeed."

UCTS, AND COMPANY ATTRIBUTES IS HIGH AMONG TEXANS

Massacre on the San Saba

FRAY ALONSO moved across the courtyard like a gray-robed specter, barely visible in the pre-dawn dimness which shrouded Mission San Saba de la Santa Cruz.* One of those howling Texas "northers" bit viciously at the coarse weave of his priestly garments and reddened his ears under the protecting cowl.

But the troubled friar was too pre-occupied with a chill of the heart to shiver against the bitter wind. It was now the 16th of March in 1758, and he had no more than a handful of converts to show for a whole year's work. Fray Alonso and his fellow missionaries to the Apaches of the San Saba country found themselves perilously close to the failure of a mission.

They had worked hard, to be sure. But the enterprise had not begun well and had grown steadily worse. Apaches had proved sullen and stubborn, full of promises and protestations at times, but never quite willing to accept the True Faith. "Some other time" was always better with them. Today, they hunted buffalo. Tomorrow, they fled southward to escape their avowed enemies, the Comanches. Like swallows, they were always on the move. Never was there time for Christianity!

As he entered the little chapel, Fray Alonso found it difficult to put off another gnawing dread—a fear that concerned his people's flesh, rather than their spirit. Wag-tongues around the mission lately spread growing rumors of impending Indian troubles. At any time, his few Tlascalan converts told him fearfully, warriors from fierce northern tribes might sweep down to destroy the mission and its people.

Evidence to support these fears and lend dire predictions a ring of truth mounted steadily on all sides, like thunderheads around the horizon. On March 2, hostile Indians had raided the Spanish herds. Only a week ago, four prospectors along the Pedernales had been set upon by savages and had barely escaped with their lives to the Presidio San Luis de las Amarillas, some three miles from the mission. Col. Diego Parrilla, commanding the presidio, was frankly worried. Not comforted by the size of his garrison, he saw to it that soldiers tightened their sword-belts and kept their powder dry. Parrilla, reflected Fray Alonso, could hardly be depended upon to defend the mission in case of a surprise attack in force.

Putting aside these bleak forebodings, the priest prepared himself for service and began to say Mass. Hardly had he finished, with Father Santiesteban beginning the second service, than loud cries of "Indians, Indians!" went up from the walls outside. Five soldiers, the mission's only guard, rushed to close the gates. Then all—priests, converts, and soldiers—took their posts for the impending attack.

What appeared to be a solid mass of Indians—mostly Comanches—charged toward the mission gates in bristling and warlike array. Strangely enough, on approaching the walls, the warriors dropped their menacing air and feigned

* On the San Saba River, near present Menard.

Nearly two centuries ago, an Indian massacre at San Saba dealt a cruel blow to Spanish mission hopes in Texas

friendship, as if their charge were only part of a lively frolic. A palaver was held, with the gates still locked between the groups at parley.

After a time, the Corporal of the Guard began to notice a number of Indians from tribes which had proved friendly in the past. Somewhat reassured, the Corporal—one Ascensio Cadena—told the missionaries he thought the Indians had come on an errand more peaceful than their first attitude had indicated.

At last the friars (ever ready to believe the best in their fellow men) admitted the Indians to the mission grounds. And for a time, the sham of friendship was continued by the warriors. Then, suddenly, as if by signal, the savages began to seize everything of value in sight . . . horses, supplies, anything that appealed to them.

As they watched the plundering, helpless priests and soldiers knew that a sad, perhaps a fatal, blunder had been made. Still they resolved to avert a massacre, if possible. In a short time, the Indians had stripped the mission of its goods and boldly proposed to go forth and rob the presidio of its greater riches in horses and supplies. But, as they blandly remarked to Alonso, they were afraid the presidio would not receive them kindly!

No doubt in a desperate effort to get rid of the invaders by any possible means, Fray Alonso offered to give one of the chiefs a letter to Col. Parrilla, asking him to receive the Indian and listen to his demands. When the note was ready, the chief arrogantly threw himself upon Alonso's own horse and rode off toward the presidio.

In a few minutes—far too short a time for the round trip to the presidio—the chief returned, angrily declaring that soldiers at the fort had fired upon him. Ignoring the obvious lie, the desperate Fray Alonso offered to accompany the chief back to Col. Parrilla and see if some solution could be worked out to buy the Indians off or persuade them to depart. Mounting the last horse unclaimed in the corral, the tight-lipped friar spurred toward the gate. A moment later, he was shot from his saddle.

The shot that killed Fray Alonso signalled the start of the massacre. In moments, the enclosure rattled with musketry and sang with speeding arrows. Jose Garcia, a soldier, fell under a volley of rifle fire. Fray Santiesteban was slain as he prayed before the altar. Two other soldiers were riddled with bullets in the patio.

Fray Molina, the only missionary left alive after the first brutal minute, fled wounded to a mission room. There he was joined by a handful of surviving comrades who barricaded themselves and prepared for a last-ditch defense.

Outside, as the trapped little party could see by peering through loopholes, Indians whipped themselves into a frightful frenzy. Images and relics were shattered and broken. Everything that could not be carried away was set afire, including the little room in which the embattled survivors had taken refuge.

At this time, Col. Parrilla was taking all possible means to dispatch aid to the mission. He had been told of the attack by a native servant who had fled, unnoticed, to the presidio just before the Indians arrived. A relief column was sent out, but it was intercepted before it was well under way. Some soldiers were killed outright, one was wounded but managed to break through to join the survivors in the mission, and the rest fought their way back to the fort.

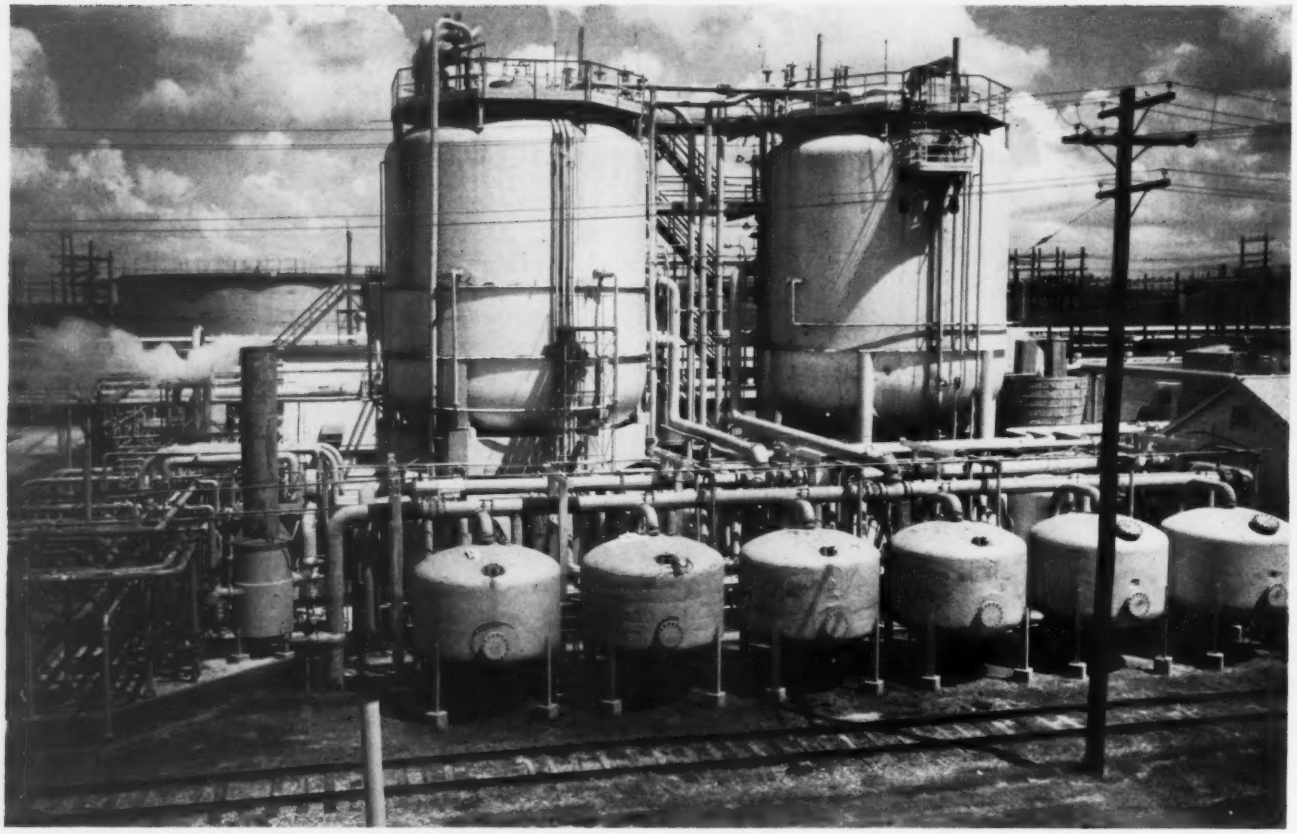
Meanwhile, back in the mission, Fray Molina and his companions found their room no longer a sanctuary but a furnace. When the Indians relaxed their vigilance for a moment, the prisoners made a dash for another building adjacent to the chapel. When this, too, was set on fire, they fled into the chapel itself. When the Indians saw this, they wrote their captives off, for the chapel was burning fiercely.

When night fell, flames and embers at the dying mission cast a red glow against the dark Texas sky. Only the chapel stood, and the survivors it held seemed doomed.

A party sent out from the presidio saved them by diverting the Indians' attention. Parrilla, under cover of darkness, had sent a patrol to reconnoiter. When Indians spotted the soldiers near the mission, there was so much yelling and confusion in the counter-attack that Fray Molina and his few companions who still lived managed to escape.

For several days afterward, Indians prowled about the countryside and the panic-stricken presidio readied itself for an attack which never came. On March 20, Parrilla and his men, making sure that the Indians had gone, marched sadly to the mission's ruins and buried the dead. The presidio remained in operation for years afterward, but Mission San Saba de la Santa Cruz was never rebuilt.

Editor's Note: This story was drawn from an account in "Our Catholic Heritage in Texas," Vol. III, by Dr. Carlos E. Castaneda.



Water for boiler feed is processed in these two huge settling tanks which dominate the skyline at No. 2 Water Treating Plant. River and well water are blended and treated at this plant. The six round vessels in the foreground row are anthracite filters.

THE Power BEHIND THE PLANT

It is a big and important job to provide all the utilities Baytown Refinery needs to keep operating around the clock

MUCH of the energy used to refine crude oil into useful products comes from electricity, steam, water, and air.

Humble's Baytown Refinery, like a great city, produces or buys tremendous amounts of these utilities. And some 144 men in the refinery's Utilities Department perform jobs that are vital to the big plant's operation. Their job is to supply dependable utilities service. Without this service, Baytown could refine not one barrel of oil.

The refinery's very life depends on the constant and controlled movement of liquids and gases through mile after mile of line. The force that moves these liquids and gases comes mainly from pumps powered by electric motors. For this and scores of other purposes, the refinery uses as much power as a city of 150,000 to 160,000 people—or about the size of Corpus Christi, Texas.

Baytown Refinery uses from forty to fifty million gallons of water every day, most of it for cooling hot oil vapors.

Steam—more than three million pounds an hour—is produced by the refinery and used for a multitude of purposes, from powering giant turbines to heating boiler feed water.

And compressed air—a capacity of 19,500 cubic feet per minute is available—may operate delicate instruments or be used to clear lines of crude oil.

Three of Baytown's utilities—steam, electric power and water—are close cousins in a highly complex system.

But to simplify, let's begin with one barrel of water and see how it serves the refinery.

Our barrel of water comes from two sources—the San Jacinto River and water wells within the refinery. At one of two water treating plants, the barrel is made up by blending river water and well water, in order to get the chemical content to fit the purpose for which it will be used. This barrel, let's say, will be used as boiler feed water. It is softened in huge settling tanks at the water treatment plant and then sent through a system of anthracite filters.

Now it moves over to a boiler house where it is quickly converted into steam of 600 pounds per square inch pressure. Our barrel of water—in the form of steam now—roars out of a boiler and runs through a turbine in an adjacent power plant. The turbine, sent whirling by expansion of the steam, turns a big generator which produces electric power. At this point our barrel of water has served its first purpose—to produce electricity.

Once through the turbine, the steam is now reduced considerably in heat and pressure, but its usefulness still lives. It is exhausted from the turbine into a 150-pound "yard steam system." In this system it may go to one of many refinery units to power a mechanical drive or be used in a heat exchanger or a distillation process.

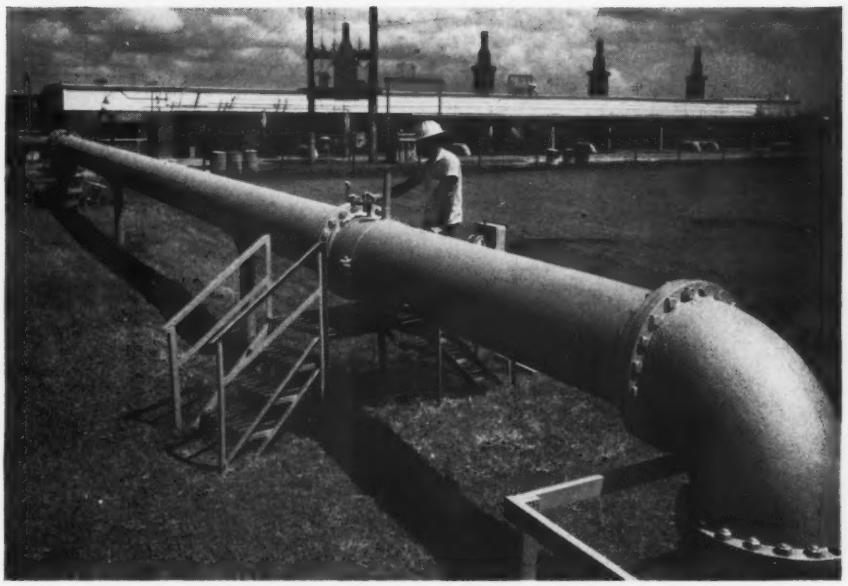
But still our barrel of water—yet in the form of steam—is useful. Let's say it served in the 150-pound steam system to operate a mechanical drive. When it exhausts from this mechanism—its pressure now even more depleted—it may move on into a 15-pound steam system and operate low pressure heat exchange equipment.

But even after this, it still serves. Condensed back to water, it may be recovered and fed back into boilers to become steam again.

Millions of gallons of water, of course, never go through water treatment plants or boilers. Heaviest demand for water—millions of gallons of it per day—is for cooling hot oil vapors and condensing them into liquids.

Not all steam goes to power turbo-generator units, either. Three of five boiler houses turn out steam at 150-pounds pressure for the yard system. Two boiler houses produce high pressure steam the usefulness of which is stretched to the last degree, as previously described.

Probably no other refinery utility has required the study and analysis in recent years as electric power. Oil re-

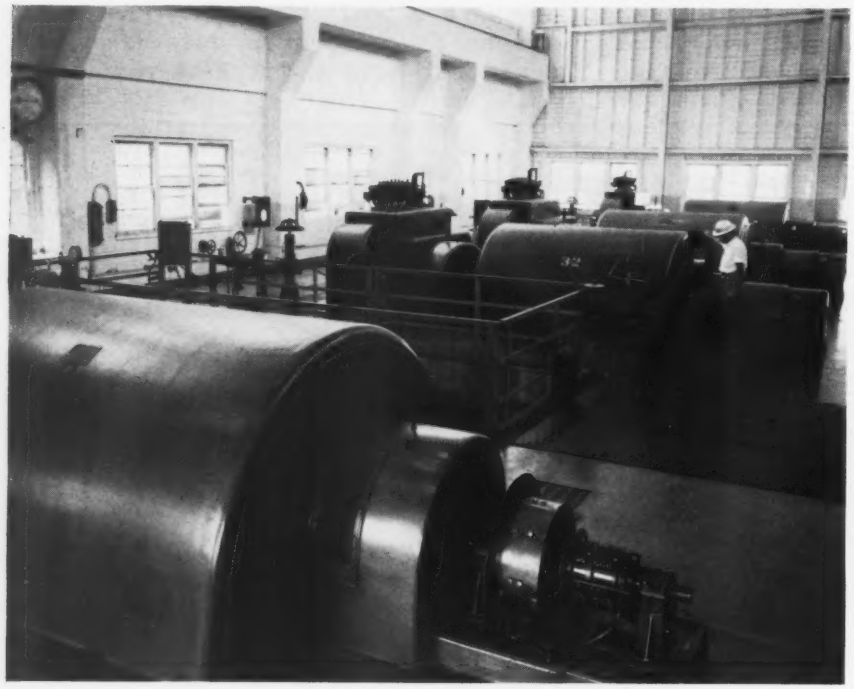


Big water line stays busy at San Jacinto River Pumphouse. Working at its capacity rate, pumphouse in one hour could provide 42-years water supply for average home.

Control room at No. 6 Boiler House, where steam is produced at 600-pounds pressure to serve refinery's turbo-generators.

At this air compressor station, air is taken from atmosphere and compressed to about 110 pounds for industrial air system.

Behind control panel at No. 3 Power Plant are gleaming rows of relays, or devices which protect electric system from short circuits. Man is reading kilowatt meters.



Floor of the turbo-generator room of No. 3 Power Plant, one of two such plants in refinery. Each generator produces power at rate of 7500 kilowatts at 13,000 volts.

fineries in general have found it profitable to use ever-increasing amounts of electricity.

Due to this climbing demand, Baytown now is set up to buy a considerable amount of its electricity from an outside source. This is necessary because refinery demands for steam have dropped far behind the need for electricity. If these two demands ran parallel, it would be economical to build more high pressure steam plants, produce the needed electric power from the steam and use the exhaust and excess for general refinery needs. But the need for steam is not that great.

Baytown, with two electrical power plants, has a total of 60,000 kilowatts of rated generating capacity and is set up to buy a capacity of 11,000 kilowatts when necessary.

Even though the refinery is dependent to some degree on this outside source of power, there have been times when the outside source bought power from the refinery, to service adjacent communities during power failures.

By far the biggest job of electricity at the refinery is pumping. Electric motors power the pumps which bring crude oil to Baytown, pump it through the many stages of processing and back out again in the form of refined products.

A growing number of automatic process control instruments are electric types. Lighting the refinery is no small electrical job. The need for electric power lies around every corner throughout the plants.

Though not so widely in demand at Baytown, compressed air is a vital utility. Two air compressor stations supply air compressed at about 110 pounds per square inch pressure. This utility flows through a system of industrial air lines and is used for operating pneumatic tools, to displace liquids in lines, for blending oils and gasolines and to operate instruments.

Instrument air demands are extremely specific. Dryers at each of the air stations are necessary so that air at zero per cent moisture can be furnished for instrument operation.

The job of providing utilities to Baytown can only be one of constantly increasing size and importance. For an oil refinery is never completed, always building and growing. And it must have power behind it to keep it operating.

Flow lines, once buried in the bank of this canal at the Duck Lake Field, have been left exposed because the soil has been eroded away by the backwash from passing work boats. Unstable nature of the swamp soil poses many problems for the operators.

DIFFICULTIES AT DUCK LAKE

Many unusual problems, and all the usual ones, have been faced in developing this oil and gas field.

ANYBODY who thinks developing and operating a gas field is "duck soup" should pay a visit to Duck Lake, in southern Louisiana.

It's not an easy place to visit, for there are no roads. The Duck Lake Field lies deep in the floodland swamps of the Atchafalaya River basin, and to get there you must go by boat.

Starting at Morgan City, you head northward up the Atchafalaya River, cross Six Mile Lake, and enter the main channel of Bayou Boutte. Here, on both sides of the bayou, you will see artificial canals which have been dredged through the wooded swamp to the various well locations. Take a turn into one of the canals to the right and you come upon the shallow body of water known as Duck Lake.

In clear weather, and with a fast boat, you can make the 12-mile trip in about 40 minutes.

This watery wasteland is squarely in the middle of the great Morganza Floodway—that man-made safety valve through which the raging floodwaters of the Mississippi River can be diverted in case of emergency to save New Orleans from threat of disaster. If the Morganza floodgates are ever opened for that purpose, the entire Duck Lake area will be inundated under 12 feet of water. This is not exactly an ideal spot for an oil and gas field.

As a matter of fact, the Duck Lake Field almost didn't get discovered. A competitive oil company drilled a wildcat test there early in 1941, but it was

Slogging through the muck of the Duck Lake swamp, after riding as far as possible in boats, the members of this geophysical exploration party had to carry their equipment.

a dry hole and the company dropped its leases.

A few years later, in 1946, Humble's geophysical exploration crews slogged their way into the swamp and turned up enough interesting subsurface information to warrant drilling another wildcat. When the engineers set out to stake the location for this test well, they had to work entirely from boats because the swamp was flooded under several feet of water. To find a solid footing for their surveying instrument, they cut down trees and used the stumps as platforms.

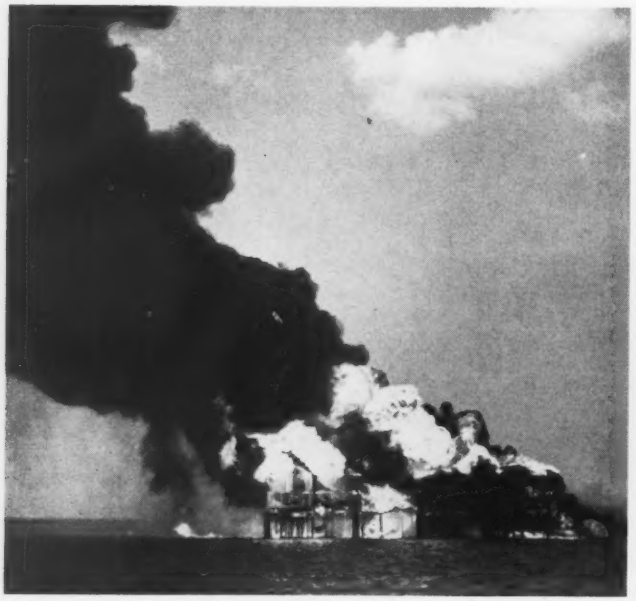
That wildcat test, drilled in 1947, was a dry hole. So was the second. But on the third attempt, Humble's drill bit finally found a productive sand. The discovery well was completed as an oil producer in January, 1949. Other wells followed, other operators moved in, and by the end of 1953 the drilling phase of the Duck Lake development was virtually completed.

The field extends under a surface area of more than 6,000 acres, and contains 31 productive or potentially productive sands. Some of these sands contain oil and gas; others contain gas not associated with oil. There are 29 gas wells and 55 oil wells in the field, of which Humble has completed 15 gas and 36 oil producers.

All operations at Duck Lake are inevitably geared to the limitations of water transportation. Since the swamp affords no land surface solid enough to support a drilling platform, the operators have had to use marine techniques. Canals were dredged to the various well sites, and barge-mounted drilling rigs were towed in to drill the wells. All supplies and materials must come by water, and every time a man moves from one spot to another, he must use a boat.

But those are conditions which are not unfamiliar to oil men in southern Louisiana. Such operations are necessarily costly, but techniques have been developed to handle the routine problems.

At Duck Lake, however, the problems were not all routine. A lot of them were unusual, unpredictable, and somewhat baffling.



Fire destroyed this processing plant installation at the Lake Raccourci field when a burning boat drifted into the platform.

Fence protects this Duck Lake platform from danger of burning boats; another safety measure is concrete deck topping.

Take that unstable swamp soil, for example. Not only is it unwilling to support any weight; it won't even stay put. The banks of the canals are constantly sloughing off into the water, washed out by the small waves from passing boats. Flow lines, once buried in these banks, are often left exposed and vulnerable. In Bayou Boutte, which bisects the field, strong currents are continuously eating out a wider and deeper channel; while the backwater canals are constantly filling up with silt. Every year or two some of these canals will have to be re-dredged to keep them navigable.

Even the normally simple matter of building a flare pit becomes a frustrating problem in the soil of Duck Lake. At one spot where a flare pit was to be made, Humble hauled in several bargeloads of oyster shell to help stabilize the piled-up dirt. To everyone's consternation, the mound of dirt and shell sank promptly into the muddy waters of Duck Lake. And as it disappeared, another area of the lake bottom 700 feet away came bulging to the surface, almost breaking several flow lines in the process.

That little problem was eventually licked by building the flare pit in a new and distant location, where the roots of trees formed a more secure footing.

Pipe lines, too, have a tendency to sink deeper when laid in this treacherous soil. One large-diameter line sagged so much that an additional section 14 inches long had to be spliced into the vertical riser to relieve the strain.

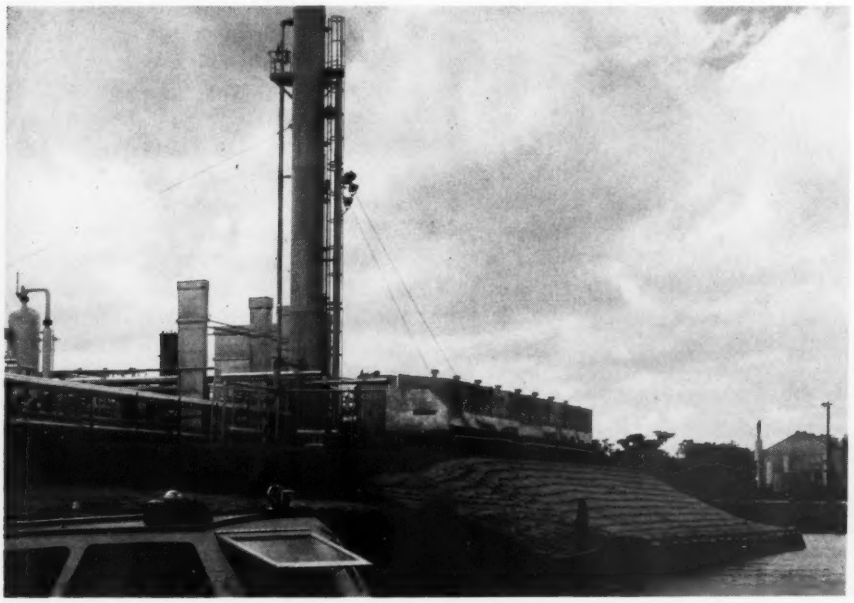
Barge-mounted rig is used in working over a Duck Lake well; marine-type equipment has been necessary for all operations in the field because the soil won't support weight.

Normally, construction of a compressor station is not too difficult a task. But at Duck Lake nothing is normal. To build the compressor station there cost just about twice as much as a land installation. And that was after several different plans had been drawn up in efforts to do it more economically. The best method found was to prefabricate the concrete platform and pilings in Morgan City and haul them to the site by barge. When the 124-foot pilings were stood up on end, they sank 33 feet into the mud before a hammer touched them. All the pilings had to be driven down 108 feet before they hit a sand solid enough to serve as footing.

Similarly the mess hall, bunk house, processing plants, and everything else needed for the operation of the field must be mounted on platforms atop long pilings driven deep into the mucky soil. And all of these platforms must be raised more than 12 feet above mean sea level, because there is always the possibility of the 12-foot flood stage.

But the threat of flood is not as worrisome as the ever-present danger of fire. In any field where facilities are mounted on open platforms, their vulnerability to fire is a recognized fact. A small patch of spilled oil floating beneath a platform can easily ignite and destroy the installation. Even the boats which are necessary to the operations constitute a fire hazard. On at least two occasions in other producing fields, costly processing plants have gone up in flames when burning boats drifted in beneath the platforms.

At Duck Lake the fire hazards are further aggravated by the water cur-



Main platform of No. 1 gas processing plant has been filled under with dirt, and riprap built to prevent erosion; weight of platform rests on long pilings, not the dirt.

Mule barge provides working space for these Humble employees engaged in treating a well with corrosion inhibitor chemical.

Liquid storage tanks are located safe distance from the main platform at the No. 1 processing plant to reduce fire hazard.

rents, which would tend to spread any burning oil to other installations downstream.

To reduce the chances for fire, the operators at Duck Lake have taken special precautions. They have covered the main platforms with concrete decks, complete with curbs and drains, so that no spilled oil will drip through. As an extra measure of safety, they have filled in with dirt under the larger of the two processing plant platforms. The other platform is in the lake where it is impossible to underfill, but a heavy fence has been built around it to protect it from any burning boat.

Each platform, of course, is fully equipped with fire-fighting facilities, and the operating personnel know how to use them.

Among the most difficult of the many problems at Duck Lake have been those concerned with unitization. How should this complex field be developed and operated for efficient production, yet with fairness to all interested parties? This all-important question has been under study for the past five years, and has not yet been completely solved. It involves extensive tests and evaluations of the various producing sands, a painstaking determination of who owns what share of each sand bearing oil, gas, or both; and the necessity for full agreement among all operators and royalty owners.

Unitization studies, under a joint committee, were initiated in the closing months of 1950. Originally, the idea was to investigate the possibilities of unitizing the entire field, oil sands and gas sands. It soon became apparent, however, that it would be better to unitize the non-associated gas sands first and separately. Several of the operators had made individual contracts for the sale of gas from these sands, and the time was near when they would be required to start delivering.

In view of this requirement, it was agreed to concentrate all efforts toward early unitization of the five principal non-associated gas sands. This was accomplished in May, 1954.

The Humble Company, which owns nearly 46 per cent interest in the unitized Duck Lake Gas Field, was elected by the other operators to build and operate the jointly-owned separation plant necessary to process the gas for sale. These facilities include low temperature extraction plants mounted on two platforms, one on each side of Bayou Boutte. This arrangement permits shorter flow lines, and also cuts down on the number of lines that have to cross the main channel of the bayou, which is 65 feet deep at that point.

But soon after the separation plants went into operation a new and unforeseen problem reared its unwelcome head. This was big trouble in the form

THE PROBLEM OF PRICES

AS IF they didn't have troubles enough already, the producers in the Duck Lake Field are now confronted with a situation more disturbing than all the other problems combined. They are not permitted to receive the prices for their gas that were agreed upon at the time they signed the sales contracts.

These contracts were entered into before the Supreme Court in the *Phillips* case decided that the Federal Power Commission had jurisdiction to regulate the price received by producers in certain sales of gas in interstate commerce for resale. As was then customary, the buyers and producers agreed on the overall amounts to be paid over the 20-year terms of the contracts. But instead of making the price per thousand cubic feet uniform for each year, the parties agreed to employ initial prices which were very low and which would be increased periodically during the terms of the contracts.

This type of contract is usually more convenient for the buyer, because his heaviest expenses and capital investment in pipeline and facilities are in the early years.

But price increases in the Duck Lake gas contracts have now been suspended by the Federal Power Commission. Apparently, the producers are to be required to continue supplying gas, but not at the prices for which they originally agreed to sell it.

If they had known five years ago what they know now, these producers might not have been so willing to risk their capital in finding and developing the gas sands under the swamps of Duck Lake. Assuredly, they would not have agreed to sell their gas at all in interstate commerce if they had known that the contract prices would be thrown out the window.

Regulation such as that now in force on Duck Lake gas will kill the incentive of producers to find new gas supplies and to sell what they have in the interstate market.

of a peculiar type of wax which appeared in some of the gas, and which played havoc with the efficiency of the low temperature separators.

The wax comes out of the wells as an innocuous liquid, mixed with the other liquids in the gas. Let the temperature drop below 70 degrees, however, and the stuff solidifies to a consistency about like that of soft ice cream. Unfortunately, the separation units must operate at 20 degrees or lower in order to dehydrate the gas to contract specifications. Under those conditions the wax rapidly clogs up lines and vessels. Nowhere else in Louisiana had this waxing problem previously been encountered, and there was no way for the operators to anticipate it.

But the problem did have to be overcome. And the corrective measures called for some drastic and expensive revisions in the processing equipment to remove more moisture and waxy condensates from the gas prior to chilling. Additional units had to be installed to improve separation efficiency at this point. Also larger quantities of glycol—an expensive anti-freeze fluid—had to be injected into the stream. This, in turn, required additional equipment to recover the glycol for re-use.

Now, after months of effort, the wax problem is under control. But the liquid recovery efficiency of the processing plant has been lowered slightly, operating expenses have been increased considerably, and the plant investment has climbed far above the original estimates.

And another complication also threatens. The gas producing sands were found to have only a weak salt water drive which may be of little help in maintaining reservoir pressures. This means the well pressures will drop rapidly as gas is produced, especially in the initial stages. And since the separation plants were designed to operate efficiently only on high pressure gas, more trouble is anticipated by the operators. Possibly an entirely new type of separation plant will be required within a few years. Furthermore, as the reservoir pressures continue to drop, large capacity compressor units will become necessary for the production of gas.

Does anybody still think it's "duck soup" to develop a gas field?

Aerial view in Duck Lake field shows bunk house and mess hall in foreground with walkway leading to No. 1 processing plant, center. Everything is on long pilings.

Humble Hits in Arizona

A new state has been added to Humble's producing territory with the recent completion of the Company's Navajo No. 1 test in Apache County, Arizona. A potential producer of high ratio gas and oil, the well has been temporarily shut in pending further development of the area and the necessary arrangements for marketing.

The well (see front cover) is in a colorful location on the high red desert of the Navajo Indian Reservation. It is situated one mile south of the Utah border and about 13 miles west of The Four Corners, where the boundaries of Colorado, Utah, Arizona, and New Mexico meet at a common point.

Geologically, the location is on the southwest flank of the East Boundary Butte Field, approximately three-quarters of a mile southwest of the Shell Oil Company's No. 2 East Boundary Butte Gas well. Humble has about 12,000 acres under lease on the west flank of the structure, and plans are now being made to drill another test next spring after the rigors of winter have subsided.

The Navajo No. 1 was drilled to a total depth of 6382 feet, tested gas through perforations opposite the Molas limestone, and was completed opposite the Paradox reef formation at approximately 4800 feet, where testing showed high ratio oil and gas.

CHANGES IN GROUP LIFE INSURANCE PLAN

Humble Oil & Refining Company recently announced three important changes in the Group Life Insurance Plan effective January 1, 1956.

These changes, all amounting to good news, help make the Group Life Insurance Plan more attractive to employees.

In the first instance, the monthly premium rate for employees is reduced from 55 cents to 45 cents for each $1,000 of insurance.

Secondly, Humble's Plan is revised to conform to a new law that provides an extension of the insurance schedule from a maximum of $20,000 to $40,000 of coverage with a further provision that the amount of extended insurance cannot exceed one and one-half years' pay. Also, the earnings range, which determines the amount of insurance to which participants carrying less than $20,000 may subscribe, has been changed to provide uniform ranges of $500 instead of ranges of $1,000 generally provided by the present schedule.

Finally, the Humble Company will pay a portion of the cost of the insurance for all participants. Since October 15, 1947, the Company has paid the cost of annuitant coverage in excess of the $2.50 a month per thousand paid by each annuitant covered, and since March 1, 1950, has paid all of the cost for annuitants who reduce their insurance to one-half the maximum amounts.

The Company believes that a contribution to all participants, including both the annuitants and the employees, is more equitable and may be of value in establishing a more stable premium rate. Accordingly, at the end of the contract year, September 30, 1956, Humble will contribute $50,000 annually to the over-all plan and will continue such annual contributions until an increase in employee premium rate is indicated, at which time the Company's annual contribution will be increased to $150,000.

Because of these improvements in the Plan, rules of application for participation or increase in coverage for employees have been liberalized.

A detailed outline of these changes furnished to all employees states that eligible employes, who wish to take the opportunity to subscribe for insurance or increase their coverage, may secure from their supervisors or from Employee Relations application forms that must be filed before March 1, 1956.

HUMBLE SELLS NEW MEXICO PIPE LINE

Humble Pipe Line Company recently negotiated the sale of its trunk line and gathering facilities in New Mexico to Shell Pipe Line Corporation. The sale, effective December 31, involves 49 miles of 8-inch trunk line and 85 miles of 2-inch to 8-inch gathering lines.

Fields served by the system include Bowers, Brunson, Cooper-Jal, Drinkard, Eunice-Monument, Eunice-South, Hobbs, Jalmat Gas Pool (formerly Cooper-Jal), Langlie-Mattix, Paddock, and Penrose-Skelly.

Humble Pipe Line first offered a market outlet for New Mexico oil in 1928 when it laid a trunk line from Hobbs to connect with the Company's trunk line at Winkler, Texas.

During October of 1955 Humble was gathering and transporting from Lea County, New Mexico, about 6,700 barrels of New Mexico crude oil daily to tidewater and to market.

LOMAX HEADS PIPE LINE COMMITTEE

O. Q. Lomax, President of Humble Pipe Line Company, has been elected chairman of the Committee for Pipe Line Companies for the coming year. The Committee is an association representing 67 interstate and intrastate pipeline carriers of crude oil and products, including both shipper-owned and independent pipeline companies.

The primary work of the Committee is to study and make recommendations on problems affecting oil and products pipeline transportation on an industry-wide scale. It also helps deal with national transportation problems through the Transportation Association and other agencies.

GONZALEZ ELECTED TO N.I.C.B. BOARD

Richard J. Gonzalez, director and treasurer of Humble Oil & Refining Company, was elected a board member of the National Industrial Conference Board at a meeting held October 20 in New York City.

The Conference Board is an independent and nonprofit institution for business and industrial fact finding through scientific research. The N.I.C.B. serves as a source of facts and figures bearing on all aspects of economic life and business operation; it is supported through subscribing associates including business organizations, trade associations, government bureaus, labor unions, libraries, individuals, and colleges and universities.

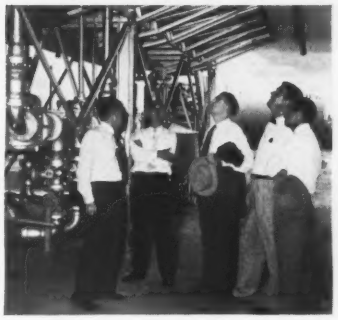
COMPANY OPENS PRODUCTS TERMINAL

Humble Oil & Refining Company's Sales Department formally opened a new products terminal on Decker Drive in Baytown, Texas, October 15.

The terminal, located in the north part of Baytown Refinery, consists of three major units; a bulk station, a van package terminal, and a light products terminal.

Opening of this important product distribution center focused attention on Humble's continuous progress in serving the modern needs of customers faster and more economically. The new products terminal is the Company's fourth of this type placed in operation since World War II. The other three are located in Irving (between Dallas and Fort Worth), San Antonio, and Houston.

The new bulk station at Baytown will serve 13 commission service stations; 39 contract dealers, including five marine stations in the Baytown sales area; industrial plants; and large consumer accounts such as rice farmers and ranchers.



Humble officials inspect loading rack at new Baytown Products Terminal.

A group of 180 bulk stations in various parts of Texas will be supplied packaged and barrel products through the van package section of the new terminal.

The light products terminal will handle all liquid petroleum products such as Esso Extra gasoline, Humble Motor Fuel, Varsol, kerosene, diesel fuel, marine gasoline, and aviation gasoline.

Recent Retirements

HUMBLE PIPE LINE COMPANY

Name	Location	Date of Retirement	Years of Service
Ernest L. Cowart	McCamey	October 30	30
William F. Fleenor	Gilmer	November 6	29
Rudolph G. Gleistein	Webster	November 30	30
James W. Guynes	Ballinger	November 4	28
Fred Kettler	McCamey	November 1	29
Harry A. Moore	Cisco	December 8	27
Elza C. Richardson	Talco	November 1	23
Howard L. Steele	New Quintana	November 5	30
James W. Strode	Mexia	December 16	22
James R. Treadway	Ector	November 1	26

PRODUCTION DEPARTMENT

Elden W. Bevis	Friendswood	December 13	22
Clarence H. Coleman	Mallalieu	September 15	32
Ross Icet	Friendswood	November 24	34
Elzie O. McConnell	Government Wells	October 29	27
Clarence R. Nelson	Pampa	December 1	32
Guy Russell	Friendswood	October 28	32
Roy L. Thomas	McCamey	November 20	36
John Willis	Clear Lake Gas Plant	December 5	35

BAYTOWN REFINERY

Guy S. Bradley	Treating Dept.	November 1	29
Samuel M. Bowen	Reclamation Dept.	November 1	34
Sam W. Dodson	Machinist Dept.	December 6	28
John N. Griffin	Railroad Dept.	November 1	28
Harold A. Halsey, Sr.	Sr. Zone Supervisor	November 23	47
John P. Helfrich	Pumping & Gauging	August 4	32
Christian R. Krenek	Pipe Dept.	August 14	18
Henry I. Moore	Pumping & Gauging	November 1	33
William R. Palmer	Pipe Dept.	November 1	34
George B. Smith	Machinist Dept.	November 26	32
John L. Stowe	Tool & Equipment Issue	November 6	29
James L. Stubbs	Contact Lube Plant	December 10	25

HOUSTON OFFICE

Marjorie E. Collins	Pipe Line Accounting	November 21	27
Sylvester H. Ewell	Building Maintenance	December 9	22
Edwin M. Hayes	Production Accounting	October 26	35
John M. Hutts	Pipe Line Valuation Dept. Accounting	December 1	35
William G. Kennard	Crude Oil Accounting	November 16	35
Elizabeth B. O'Brien	Refining Cost & Evaluation	November 1	26
Robert E. Welsh	Exploration	October 17	32

Deaths

Employees: Marilyn A. Alpha, 19, office messenger at Baytown Refinery, on October 29; Earl G. Bielstein, 41, local manager at Gonzales Bulk Station, on November 3; Delbert W. Burgin, 24, laborer in Geophysics in New Mexico, on September 30; Lionel G. Despaux, Sr., 49, mechanical supervisor at Paradis, on October 13; William A. Hampton, 58, Humble Pipe Line district superintendent at McCamey, on November 13; Edward E. Holdgraf, 58, senior pay roll clerk in the Houston Office, on November 11; Joe A. Kemp, 55, engineer at Gilmer Station, on November 11; Carroll F. Levingston, 36, helper at Baytown Refinery, on November 9; James C. McMurry, 63, assistant connection foreman at Ingleside, on October 15; Karl H. Miller, 41, machinist at Baytown Refinery, on October 18; Jack Moon, 57, lease pumper-gauger at Eucutta, on October 16; John A. Old, 55, glass blower at Baytown Refinery, on November 3; Robert A. Sutton, 47, research geophysicist in the Houston Office, on November 10.

Annuitants: Howard L. Black, 67, former lease pumper-gauger at London, on October 16; Allah R. Calaway, 74, former pipe liner at Harbor Island, on November 12; Gus A. Gandre, 73, former check-in clerk in the Houston Office, on September 30; Floyd M. Houston, 72, former stock gauger and assistant delivery man at Webster Station, on October 24; John H. McClendon, 69, former lease pumper-gauger at Hardin, on October 7; Elkanah H. Mahan, 68, former engineer at Palestine Station, on September 26; William E. Miller, 67, former lease pumper-gauger at Tomball, on October 6; Travis O. Neuman, 61, former working shop foreman, at Baytown Refinery, on October 21; Jacob W. Pierce, 71, former helper at Baytown Refinery, on November 7; Luther B. Pool, 72, former operator-gauger at Arp Station, on September 24; Charles E. Stubbs, 68, former pipe liner at Pettus Station, on November 5; Robert B. Wilkins, 75, former crum boss at Andrews, on October 31.

Behind this issue

● Letting a man (or even another woman) have the "last word" is the job of Dr. Virginia Miles, staff psychologist for McCann-Erickson, Inc. Under her leadership, the recent depth survey described on pages 8 through 11 was conducted, with only the minimum of talk from her interviewers—just enough to urge the respondent to keep responding. Perhaps Dr. Miles' occupation would not come under the heading of a "dream job," but certainly it would be listed as unusual—"a woman working at not expressing her own views."

● Unluckily for visiting artists, Humble's Exploration people cannot always conveniently choose their wildcat well locations near points served by airlines. E. M. "Buck" Schiwetz found that out when he had to make a trip to the Company's first wildcat well in Arizona. (See front cover.) Imagine his surprise when a ticket clerk at Houston's International Airport advised him, with a wry smile: "I know it sounds silly, but I'd recommend you go via Denver!"

Buck did. He flew to Denver and thence to Farmington, New Mexico. From there, he took a car the rest of the way to the Arizona wildcat. But, once there, he seems to have been amply repaid for traveling the roundabout route. "Nature completely dwarfs any man-made operation out there," commented Schiwetz. "That's what struck me, and that's what I tried to paint."

Buck tried to paint something else, too, but it didn't get past the first line of editorial defense. In the right foreground of his preliminary sketch of the wildcat, he had put the kind of pumpjack one normally sees on a producing well. "What's this about our first well?" yelped the editors. "There's one, already completed!"

Schiwetz tried in vain to explain the pumpjack was part of a water well that served drilling operations. No, too much confusion, it was ruled. Reluctantly, Buck made a few careful daubs of color, and the offending water well vanished from the picture.

The "itinerant" Indians watching the drilling rig on the cover are Navajos, descended from the original tribes of northern Arizona. Leases are entered into with the tribal council, which is in continuous session at Window Rock, Arizona. Page 22 gives more details about the well.

● Ordinarily, proper names or saints' names in Spanish are not too hard to figure out. Jose would be Joe or Joseph, Pablo would be Paul, Antonio would be Anthony. San Marcos would be Saint Mark, and so on down the line.

But what of San Saba? In writing the story, "Massacre on the San Saba," our editorial curiosity was piqued. Whence came the Saba? Webster's dictionary blew away the fog by telling us that *Saba* comes from a Biblical root-word, *Sheba,* the ancient Arabian kingdom which once sent its queen to charm King Solomon. People of Saba, it might be added, were noted for their wealth.

After *Saba,* Webster takes up Sabaism, which he defines as "star worship." So there you are: A man from Sheba, or a star worshipper—or maybe both. Take your choice.

● Among the lesser difficulties at Duck Lake (see pages 17-21) are those encountered by landlubber writers and photographers who go there to gather material for *Humble Way* articles. For example, staff writer Gus Stewart had to learn that the river whose name sounds like "Shoffle-Liar" is actually spelled "Atchafalaya," and that "Buy-O Bootay" must be written "Bayou Boutte."

Staff photographer Mel Coston, on the other hand, was plagued by the constant problem of finding good camera positions. Usually, the swampy soil was too unstable for him to walk on, and a boat couldn't quite reach the vantage point he sought. Fortunately, a visiting airplane equipped with pontoons arrived on the scene, and Coston was able to shoot some of his best pictures from the air.

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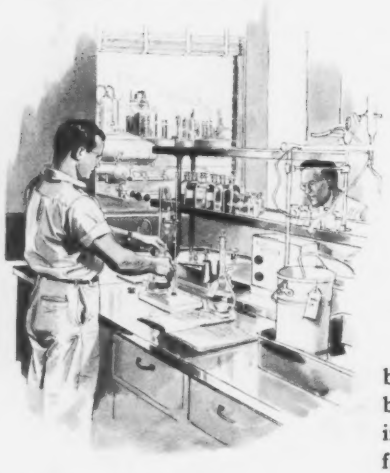
All the Old World charm of historic New Orleans is captured in this view of lamp-posts on Jackson Square, with St. Louis Cathedral in the background.

The Humble Research Laboratory in Houston



Inside the Research Laboratory at Humble's Baytown, Texas, Refinery.

Research Paces Oil's Progress

There are three reasons why America's petroleum industry has been able to supply the ever-increasing demand for energy called for by our mechanized way of life: 1, it has fearlessly invested its capital in the hazardous search for oil and gas; 2, it has steadily expanded its facilities; and 3, *it has conducted endless research to find better, more efficient ways to make the oil products America needs.*

Research! That's the key to the petroleum industry's progress. And the Humble Company assures itself a place of leadership in this field with two great research laboratories.

In the Humble Research Center in Houston scientists and engineers study all phases of finding, producing, and conserving oil and gas.

In the Research Laboratory at Humble's Baytown, Texas, Refinery, highly skilled technicians seek to develop new and better petroleum products, to improve those we already have, and to develop methods for making these products more efficiently.

Just as America's progress depends on oil, so oil's progress depends on research.

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